


SYSTEMATIC AND TAXONOMIC NOTES ON NEOTROPICAL HAIRSTREAK LYCAENIDS IN CONNECTION TO THE GENUS *MEGATHECLA* (LYCAENIDAE: THECLINAE: EUMAEINI)*

Zsolt Bálint¹

Resumen

Se revisa el género *Megathecla* ROBBINS, 2002 (un reemplazo no ético de *Gulliveria* BALINT, 2002). Se demuestra que el taxón *Papilio cupentus* STOLL (1780), asignado al género *Megathecla* por ROBBINS, no puede considerarse como una especie hermana de *Thecla gigantea* HEWITSON, 1867 (la especie típica de *Gulliceana*). Se describe un nuevo género monobásico *Cupathecla* BALINT, **gen. n.** para *Papilio cupentus*. Se describe *Thereus wojtusiaki* BALINT, **sp. n.**, demostrando que el color azul iridescente de la cara dorsal de las alas no es un carácter exclusivo del género “*Megathecla*”.

Palabras clave

Caracteres, *Cupathecla*, ética, Eumaeini, *Gullicaena*, *Megathecla*, monofilia, Neotrópico.

Abstract

The genus *Megathecla* ROBBINS, 2002 (an unethical replacement of *Gulliveria* BALINT, 2002) is reviewed. It is demonstrated that the taxon *Papilio cupentus* STOLL (1780), associated with *Megathecla* by ROBBINS cannot be considered as a sister-species of *Thecla gigantea* HEWITSON (1867), the type species of *Gullicaena*. It is placed in a new, monobasic genus *Cupathecla* BALINT **gen. n.** *Thereus wojtusiaki* BALINT, **sp. n.** is described, to demonstrate that the iridescent “chalky blue” wing dorsum is not an exclusive character of “*Megathecla*”.

Key words

Characters, *Cupathecla*, ethics, Eumaeini, *Gullicaena*, *Megathecla*, monophyly, Neotropics.

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¹ Department of Zoology, Hungarian Natural History Museum, Hungary.

INTRODUCTION

The butterfly described by HEWITSON (1867) as „*Thecla gigantea*”, on the basis of (at least) two male syntypes, is a little known, exceptional species with apparently no closer relatives among Neotropical Lycaenidae.

The genus *Gulliveria* D'ABRERA & BÁLINT, 2001 was described for this beautiful species in order to underline its status (D'ABRERA 2001). It later appeared that *Gulliveria* was homonymous with a name used previously for fishes (Vertebrata: Apogonidae), therefore a replacement name - *Gullicaena* - was introduced by BÁLINT (November 2002). A lectotype was designated for the type species of the genus. The male genital structure of *Gullicaena gigantea* was briefly discussed. It was also pointed out that the female was found in Ecuador but remained undescribed (BÁLINT 2002).

Earlier the same year, ROBBINS (June 2002), proposed, without consulting BÁLINT, his own replacement name for *Gulliveria* - *Megathecla*. The action taken by Robbins was unethical according to the International Code of Zoological Nomenclature, Appendix A: Code of Ethics, point 3 (INTERNATIONAL COMMISSION OF ZOOLOGICAL NOMENCLATURE 1999: 124). The clauses of the Code of Ethics are however recommendations only with no power for ruling, consequently the genus *Megathecla* has priority over *Gullicaena* n. syn.

“*Thecla*” *gigantea* (type locality: Pará, Brazil) has been reported only from the Amazonian lowlands (Ecuador and Peru). According to LAMAS *et al.* (2004) it is known from “fewer than eight male” specimens. This report does not take into account three perfectly preserved male individuals from “Belém/Pará” deposited in the Fournier Collection of the Muséum National d'Histoire Naturelle, Paris (Fig. 1). These specimens were purchased from Martin Braun, *alias* Hugo Charles Boy (1890-1937), a German naturalist, who lived in Manaus in the 1920-30s (MOLNÁR 1957: 72-73, plus many other citations on Boy), and has been providing various European museums and individual collectors with natural history items directly or *via* the Staudinger Bang-Haas firm (HORN *et al.* 1990: 52). LAMAS *et al.* (*op. cit.*) also indicated that „the first known female of the extremely rare Amazonian species” was described from Peru, and that “many putative males were also seen, but only a single female was collected”. The lectotype of *Thecla gigantea* was designated from the syntypic material, also by LAMAS *et al.* (2004), who mentioned that *Megathecla* is not monotypic and includes *Thecla cupentus* (STOLL 1780): “even though it has distinct ventral wing pattern - because males of both species share a scent pad, *sensu* ROBBINS (1991), within the discal cell, similar genitalia ..., and a similar hue of blue on the dorsal wing”.

Most recently, *Megathecla* was placed in the *Thestius* section by Robbins in LAMAS (2004: 126), as a genus closely related to *Bistonina* ROBBINS (2004) (type species *Thecla biston* MÖSCHLER, 1887). The basal taxon of the section is *Bistonina erema* (HEWITSON 1874) according to ROBBINS (2004), whereas the terminal species is an undescribed species of the genus *Lathecla* ROBBINS (2004) (type species *Thecla latagus* GODMAN & SALVIN, 1887) occurring, as indicated, in Brazil, in the State of Rio de Janeiro.

The present article has the following aims:

- (1) Notes on *Megathecla*, with the remark that that the lectotype designation of LAMAS *et al.* (2004) is invalid and the placement of *Papilio cupentus* in *Megathecla* is erroneous in the light of presented evidence, and that *cupentus* and *gigantea* are not sister-species.
- (2) Description of *Cupathecla* gen. n., a new monotypic genus with the type species *Papilio cupentus* STOLL (1780), as already proposed (*cf.* VANE-WRIGHT, 1975: 48) (Fig. 2), suggesting its closer relations to several species placed by Robbins in his genus *Bistonina*.
- (3) Description of a species characterised by „chalky iridescent blue” wing dorsum belonging to the *Thereus* section *sensu* ROBBINS (2004), proving by the same that the “similar hue of blue on the dorsal wings” is not a exclusive generic character for the lineages of *Cupathecla* and *Megathecla*.

In the forthcoming parts I cite only the authors of the species and genus-group names discussed in detail. In other, more general cases, the “Checklist of Neotropical Butterflies” edited by LAMAS (2004) can be consulted.

1. NOTES ON *MEGATHECLA*

The designation of the lectotype of “*Thecla gigantea*” by BÁLINT (2002) is valid, therefore the posterior designation of a “lectotype” by LAMAS *et al.* (*op. cit.*) was not justified. Interestingly, in both cases the same individual had been chosen as the lectotype, primarily because of the same reason: the selected syntype specimen possesses an abdomen! LAMAS *et al.* (*op. cit.*) published a drawing of *M. gigantea* male genitalia, unfortunately without offering any data about the dissected specimen. Considered that the genitalia were drawn by George Venable, a professional artist of the National Museum of Natural History of the Smithsonian Institution (Washington DC, USA), this is where the dissected specimen is probably deposited, or otherwise in the Museum de Historia Natural de la Universidad Nacional Mayor de San Marcos (Lima, Peru) (LAMAS *et al.*, *op. cit.*, p. 102).

The genitalia drawing of *M. gigantea* is correct, but it fails to show some details, such as the sclerotised fultura inferior, probably supporting

the aedeagus from the ventral side of medial vinculum. I present here a digital documentation of the lectotype male genitalia (Fig. 3). As already stated, *Papilio cupentus* STOLL (1780) was transferred to *Megathecla* without any explanation by ROBBINS (2002). LAMAS *et al.* (*op. cit.*) also used the combination *Megathecla cupentus* and presented three arguments, that I cite below in quotation marks. None of them supports the monophyly of *cupentus* and *gigantea*.

- (a) „males of both species share a scent pad, *sensu* ROBBINS (1991), within the discal cell”. This generalised statement is not a valid taxonomic argument, as there are several eumaeine genera with similar, large scent pads „*sensu* Robbins” in their forewing discal cell (just to mention a few in alphabetic order: *Bistonina*, *Contrafacia*, *Magnastigma*, *Molus*, *Ocaria*, *Rekoa*; etc.). The *cupentus* and *gigantea* scent pads are covered with differently pigmented and arranged scent scales, whereas congeneric or monophyletic taxa generally have qualitatively similar scales in their scent pads (*cf.* *Penaincisalia* genus group), with some exceptions (*cf.* ROBBINS 1991: *Rekoa*; BÁLINT, CONSTANTINO & JOHNSON: *Atlides*). *M. gigantea* has uniform black scent scales in its scent pad, and additionally, large postdiscal intercellular scent patches made up by structurally similar scales (*cf.* Fig. 1). These characters are qualitatively different from *cupentus*, which lacks any scent patches, and instead has a large disco-cellular scent pad covered with brown scales (*cf.* Fig. 2), thus the *cupentus* and *gigantea* scent pads are not synapomorphies.
- (b) „similar genitalia”. It is well documented how uniform the eumaeine male genitalia are (NICOLAY 1971: 88; ELIOT 1973: 440). The male genitalia of *cupentus* and *gigantea* are nevertheless qualitatively different in the following respects: *gigantea* has a sclerotised inferior fultura, contrary to *cupentus*; *gigantea* has a small aedeagal dorsal cornutus, contrary to *cupentus*; in *gigantea* ventral cornutus reaches the aedeagal opening, whereas in *cupentus* ventral cornutus is restricted to the basal part. (Fig. 3b). Consequently, the similarity of their male genital structures is very superficial and does not support any sister-species relationship. The female genital structures of *gigantea* is not documented.
- (c) „a similar hue of blue on the dorsal wings”. I believe that this is the chalky iridescent blue, considered as typical for the genus *Bistonina* (ROBBINS 2004: 277). However, the same shade of blue can be found in a wide array of species representing not only the genera *Bistonina* and *Strymon* (examples given by Robbins) but also in other “genera” *sensu* Robbins, such as *Arawacus*, *Calycopis*, *Evenus*, *Magnastigma*, *Ministrymon*, *Nicolea*, *Tmolus* and *Rhamma*, placed in different and distantly related “sections”. I did not examine the scale nanostructures of most of the mentioned taxa, but it seems very likely that this trait is

a simple convergence. It has to be pointed out that *cupentus* and *gigantea* have different blue shades, differing from *Thereus gabathana*, given as an example (see below). Moreover, the dorsal wing colour of *cupentus* females is somewhat variable. I examined several specimens with intense metallic hue, and others with approximately the same dorsal blue as their males.

- (d) Ventral wing patterns of *cupentus* and *gigantea* are qualitatively distinct, as pointed out by LAMAS *et al.* (*op. cit.*). There are some superficial similarities: *cupentus* possesses a ventral forewing medial line extending to the tornal area where it joins the submarginal white line; *gigantea* lacks this pattern, and instead has a discoidal patch (not apparent in *cupentus*) and a submedial line comprised within black intercellular lines running to the anal margin, more or less parallel, broken basally in cell Cu-A2. The hindwing ventral pattern of the two taxa is also totally different: *cupentus* (which has a typical pattern for the eumaeines) has a white transverse medial line, which can be divided into an upper and a lower part, forming a discoidal oval pattern, as the two parts run parallel in that area but not merge; *gigantea* hindwing venter has the same medial pattern as in its forewing; *cupentus* hindwing pattern in submarginal and marginal areas are also typical eumaeine with white intercellular blotches plus the tornal “Thecla spot” in the cell CuA2; *gigantea* is poorly patterned with only a row of submarginal black lines, but the tornal “Thecla spot” is also developed. Similar wing shape, venation and pattern in many cases are reliable indicators for close relationship in eumaeines (cf. *Arcas*, *Calycopis*, *Ipocia*, *Macusia*, *Thecloxurina*, etc.). The wing shape and venation of *cupentus* and *gigantea* are qualitatively different. The ventral wing pattern of *cupentus* and *gigantea* are also qualitatively distinct, therefore these traits are also indicating that the two taxa are not closely related.

Consequently, I consider the combination *Megathecla cupentus* (STOLL, 1780) LAMAS, RAMÍREZ & ROBBINS (2004) to be erroneous, and I transfer the taxon *cupentus* to a new monobasic genus described below.

2. Description of *CUPATHECLA* Bálint, GEN. N.

Type species: *Papilio cupentus* STOLL, 1780

Diagnosis and characters: Medium sized (most examined individuals are medium sized; fore wing length from erection of the cubital vein to radial vein R5 less than 17 mm (n = 20), but two individuals are considerably smaller (fore wing length less than 12 mm); dorsally typical eumaeine lycaenid pattern with structural blue colour and large scent pad in male forewing

discal cell and lacking postdiscal scent patches; ventral wing pattern and shape also typical eumaeine with vertical and transverse, roughly lineal white median line, and undulate, white submarginal line; hindwing vein CuA2 terminus with a long, whereas vein CuA1 with short terminal tail-like extension, tornal area with large typical eumaeine „Thecla spot” in intercellular space cell CuA2-1A+2A. The genus is characterised by (1) a female genital duct - a flatten tube giving, laterally appearing as a simple, elongate upcurving plate (Fig. 4); (2) a circular scent pad covering 2/3 of the apical discal cell, placed in a cavity, with very small and tuff sided, rufous scales; basal part of the discal cell covered with scales generating pale, not gleaming blue structural colour (Fig. 5); (3) unusual pattern of the hindwing venter in the medial area, comprised first by a white line starting from mid-costa and runs to base of vein CuA1, where it ends, plus another delicate white line appearing at base of vein M1 in the discal cell and running to the tornal area; these two lines create an oval but open pattern in the apex of the hind wing discal cell (Fig. 6).

Remarks. On the basis of the female genital duct, which is a short and simple plate-like tube with heavily sclerotised margins extending from ventral part of the 9th abdominal segment (genital opening) to the 8th in a unique position (the seminal duct is almost reaching the inner dorsal side of the 8th segment), plus the male legs with fur-like specialised long scales, I argue that *Cupathecla* is closely related to *Bistonina*, which has an unsolved placement in the *Thestius* section (ROBBINS 2004: 277). This putative affinity is also supported by the *cupentus*-like scent pad of *Bistonina*, which is supplemented by black scent scales in the discal cell (Fig. 7).

Previous placement of *cupentus* in *Thecla* (WESTWOOD 1852 and other workers) and *Thereus* (D'ABRERA 2001) were based on homoplasious wing character states. Interestingly, ROBBINS (2004: 277) stated that he had problems with the placement of *Bistonina*, but he temporarily classified *Bistonina* within the *Thestius* section genera (ROBBINS 2004: 126). A thorough character analysis of eumaeine androconia will probably reveal that *Cupathecla* and *Bistonina* have closer relationship to *Thereus s. l.* However, considered that the *Cupentus* male legs are *Bistonina*-like hairy, and the female has a *Bistonina*-like genital duct, the placement of *Bistonina* and *Cupentus* in the *Thestius*-genus group is well supported.

The systematic position of *Megathecla* is unresolved because of its particular androconia, male genitalia and wing pattern. I doubt that *Megathecla* is a sister-genus of *Bistonina* as indicated by Robbins, or that it belongs to the “*Thestius* section”. The monophyly of *Thestius sensu* Robbins is also questionable, if *Th. pholeus* is the basal taxon. *Papilio lycabas* and its undescribed sister species have some traits resembling *Cupathecla* (scent pad and ventral wing markings). I argue that the genus *Thestius* must

be restricted to the species *meridionalis*, *pholeus*, *selina* plus *feminalis* (the latter considered as an individual form by Robbins).

C. cupentus has a wide distribution in South America, extending from southern Mexico to Paraguay and south-eastern Brazil in subtropical and tropical areas.

3. Description of *Thereus wojtusiaki* Bálint sp. n. (Figs. 8-12)

TYPE MATERIAL: Holotype, male, deposited in the Zoological Museum of the Jagiellonian University. The specimen is in moderate condition, set dorsally, both hindwings damaged near tornus; the abdomen has been dissected and is stored apart, pinned to the specimen in a plastic microvial. Forewing length from the base of cubital vein to vein R5 end is 18 mm. The specimen is labelled: (1) "ECUADOR // Prov. Pichincha; (vía) Tandapi / / 2800 m; 02.2002. // coll. J. Wojtusiak." (white paper, printed letters); (2) gen. prep. no. 1081, Zs. Bálint, Budapest (white paper, printed letters); (3) "Holotype // *Thereus* // *wojtusiaki* Bálint" (red paper, printed and/or hand written letters).

DIAGNOSIS AND DESCRIPTION: The phenotype is typical for *Thereus* genus group of the eumaeines (cf. JOHNSON 1989 and 1990; ROBBINS 1991) with a wide dorsal fore wing shape (margins are almost equal in size), most of the costal and marginal areas are covered with black scales but basal, medial and submedial areas possess an unusual iridescent chalky blue colour. The male possesses a large scent pad situated in a cavity and also a large postdiscal flat scent patch. The scent pad and the patch scales are different in their structure and pigmentation. Hind wing shape is also typical for an eumaeine with filamentous tail like extension at vein termini Cu1 and Cu-A2, with the eumaeine tornal "Thecla spot", otherwise similarly coloured as that of fore wing. Ventrally, the species possesses a typical chocolate brown ground colour and a reduced pattern in both of the wings, but the typical "Thereus" elements (white transverse median line and submarginal line with hind wing tornal orange coloured and black pupilled "Thecla spot") are present. The male genitalia is also typical for the "Thereus-section" as defined by Johnson and Robbins (*l.c.*).

Superficially, the closest taxon seems to be *Thereus gabathana* (STRAND, 1918) ROBBINS, 2004 [unsupported combination] (BMNH no. 701320, holotype: "Colombien"; examined, The Natural History Museum, London), but it differs from *Th. wojtusiaki* by the following traits: (1) dorsal wing ground colour is deep but chalky blue (lighter in *Th. gabathana*) (Fig. 8); (2) sides of the male forewing dorsal scent pad cavity are also covered with black scales (brown in *Th. gabathana*) (Fig. 10); (3) fore wing outer margin is slightly convex (straight in *Th. gabathana*); (4) ventral wing ground colour is

chocolate brown (greyish brown in *Th. gabathana*) (Fig. 9); (5) ventral fore wing pattern with parallel white submedian and submarginal lines (merging in *Th. gabathana*). Male genitalia are typical of the genus *Thereus* (cf. ROBBINS 1991) with a heavily sclerotised dorsal vincular rim supporting the brush organ; appendix angular is also sclerotised and large; aedeagus with a very long dorsal cornutus which is slender and curved; ventral cornutus is shorter and more sclerotised, apparently fused basally (Fig. 10).

ETYMOLOGY: The species is dedicated to Dr. Janusz Wojtusiak, head of the Zoological Museum of the Jagiellonian University, Kraków, Poland.

REMARKS: I place the new species in the genus *Thereus sensu* ROBBINS (1991) based on the male the genital brush organ supported by a sclerotised rim situated on the dorsal edge of the vinculum. The systematics of the genus *Thereus* proposed by Robbins is not satisfactory. In this vast assemblage of taxa there are lineages worth recognising as separate genera, some of them already named by K. Johnson. Moreover, several taxonomic statements are grossly incorrect, for example concerning *Papilio ismarus* and *P. phalanthus* considered to be synonyms (Bálint, in prep.).

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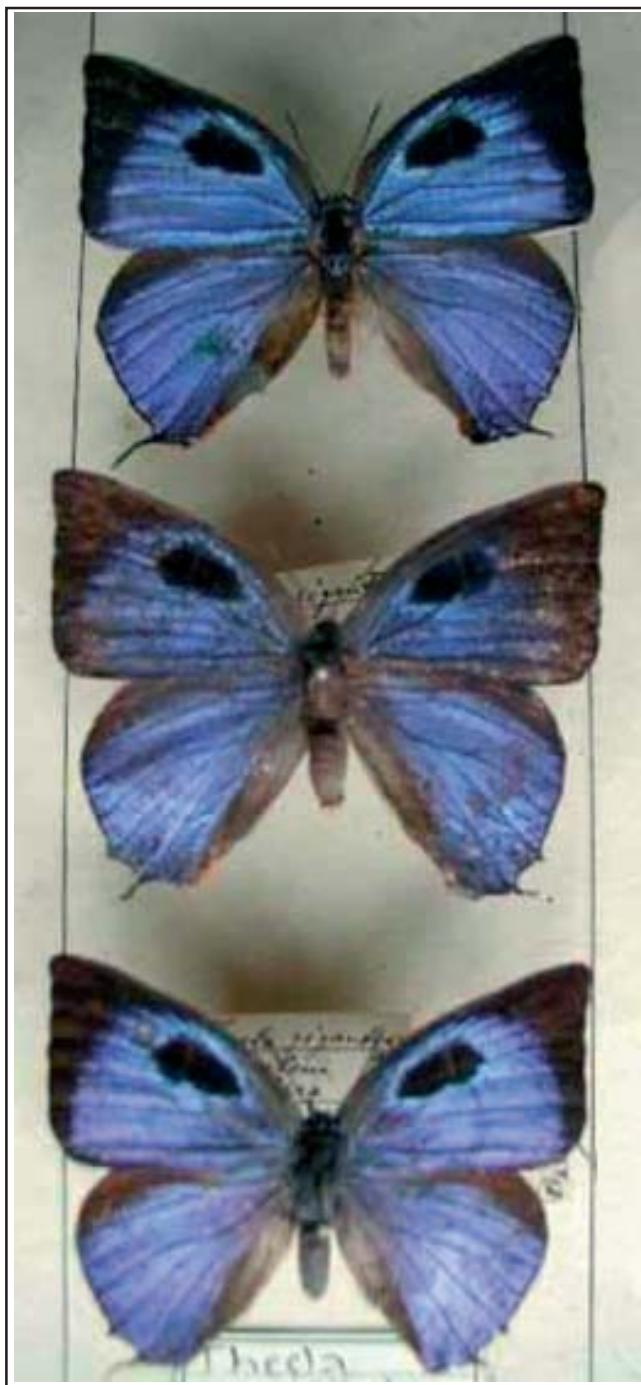


Fig. 1. Males of "*Tecla*" *gigantea* Hew. Paris Museum, N.H. Belém
Para. Brasil. (Color)



Fig. 2. Example of *Cupathecla* gen. n Type species: *Cupathecla cupentus* STOLL loc.



Fig. 3. Male genitalia of “*Thecla*” *gigatean* Hew.



Fig. 3B. Male genitalia of *"Thecla"* *gigantean* Hew.



Fig. 4. Male genitalia of *Cupathecla* gen. n

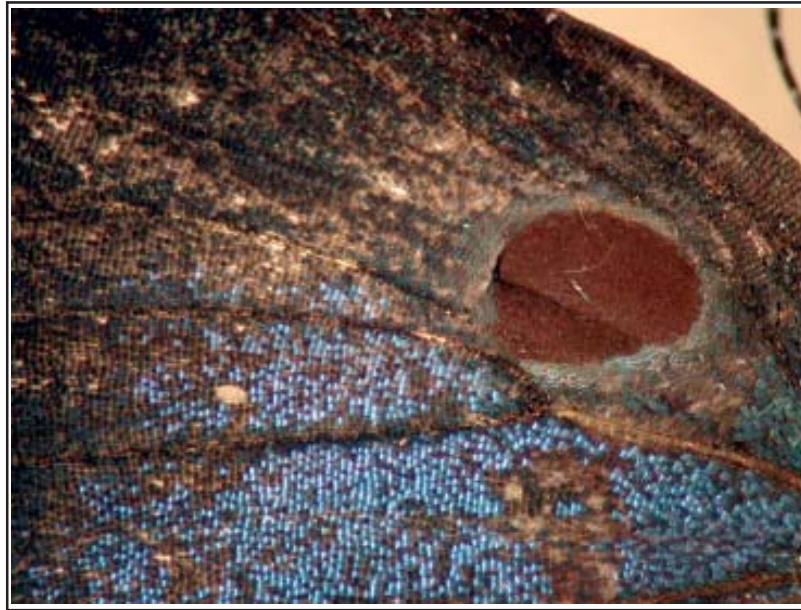


Fig. 5. Discal Cell of *Cupathecla* gen. n



Fig. 5. Ventral Pattern of *Cupathecla* gen. n

Systematic and taxonomic notes on neotropical hairstreak lycaenids
in connection to the genus *Megathecla* (Lycanidae: Theclinae: Eumaeini)

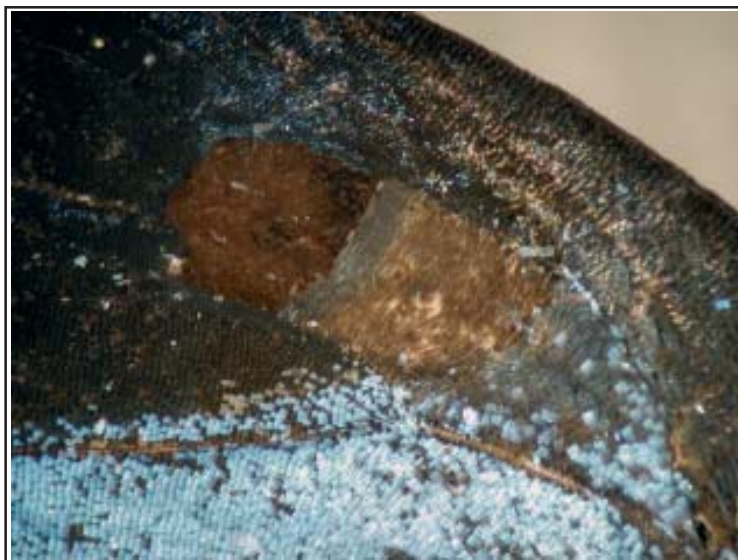


Fig. 7. Scent Scales of *Bistonina*



Fig. 8. Example of *Thereus wojtusiaki* Balint sp.n Type species: Loc;
Tandapi Prov Pichincha Ecuador



Fig. 9. Ventral Pattern of *Thereus wojtusiaki* Balint sp. n

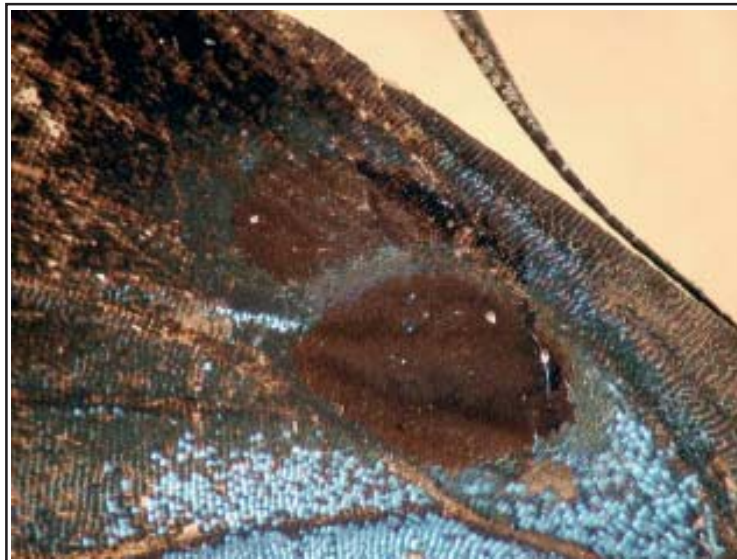


Fig. 10. Male forewing dorsalscent of *Thereus wojtusiaki* Balint sp. n

Adiciones a la fauna de mariposas de la Reserva Forestal de Tambito (Colombia):
descripción de cuatro subespecies nuevas de la subtribu
Pronophilina (Nymphalidae, Satyrinae)



Fig. 10. Male genitalia of *Thereus wojtusiaki* Balint sp. n

